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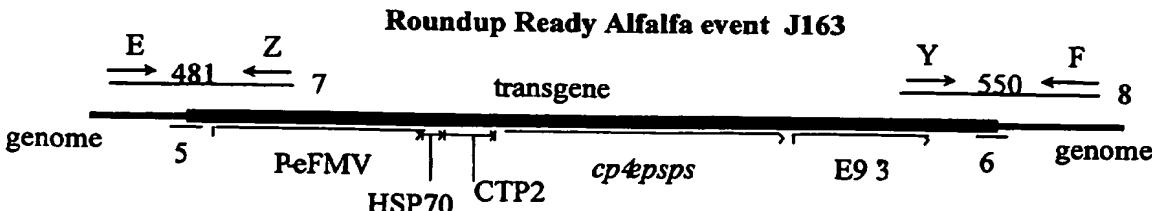
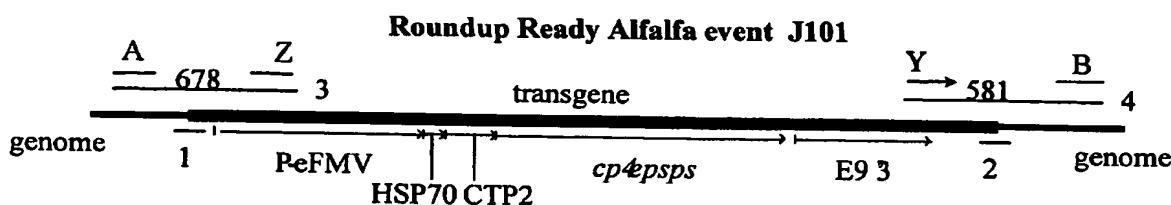
- with international search report
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(54) Title: GLYPHOSATE TOLERANT ALFALFA EVENTS AND METHODS FOR DETECTION THEREOF



(57) Abstract: The present invention provides for alfalfa events J-101 and J-163 and DNA molecules unique to these events. The invention also provides methods for detecting the presence of these DNA molecules in a plant sample.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/82 A01H5/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N A01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, EMBASE, Sequence Search, EMBL, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 057 496 A (CONNER ANTHONY JOHN) 2 May 2000 (2000-05-02) column 20 - column 23	1-32
X	WO 92/04449 A (MONSANTO CO) 19 March 1992 (1992-03-19) the whole document	1-32 -/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
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- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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- *&* document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>MCCASLIN M: "An Update on the Development of Round Up Ready Alfalfa" PROCEEDINGS OF THE 2002 WESTERN ALFALFA AND FORAGE CONFERENCE, RENO, NEVADA, DECEMBER 11-13, 'Online! 13 December 2002 (2002-12-13), pages 1-2, XP002285243 Retrieved from the Internet: URL:http://alfalfa.ucdavis.edu/subpages/2002Symposium/pdf/McCaslin%20-%20A1falfa%20Update.pdf > 'retrieved on 2004-06-21! the whole document</p> <p>-----</p>	1-32
X	<p>NATIONAL ADVISORY COMMITTEE ON AGRICULTURAL BIOTECHNOLOGY: "2001 Annual Report" INTERNET ARTICLE, 'Online! January 2002 (2002-01), XP002285406 Retrieved from the Internet: URL:http://siiap.sagyp.mecon.ar/12/ingles/membrecia.htm > 'retrieved on 2004-06-22! the whole document</p> <p>-----</p>	1-6, 13, 27-29, 31
X	<p>CLINE H: "Trials probe Roundup Ready alfalfa" WESTERN FARM PRESS, 'Online! 5 October 2002 (2002-10-05), XP002285244 MINNEAPOLIS, MINNESOTA, USA Retrieved from the Internet: URL:http://westernfarmpress.com/mag/farming_trials_probe_roundup/index.html > 'retrieved on 2004-06-21! the whole document</p> <p>-----</p>	1-6, 13-19, 27-29, 31
P, X	<p>COMISION NACIONAL ASESORA DE BIOTECNOLOGIA AGROPECURIA: "Liberaciones al medio - Permisos otorgados durante el 2002" INTERNET ARTICLE, 'Online! XP002285531 BUENOS AIRES Retrieved from the Internet: URL:http://www.sagpya.mecon.gov.ar/12/liberaciones_ogm_2002.htm > 'retrieved on 2004-06-22! the whole document</p> <p>-----</p>	1-6, 13-19, 27-29, 31
X	<p>WO 02/36831 A (MONSANTO TECHNOLOGY LLC ; ZENG QINGYI (US); KRIEB RACHEL (US)) 10 May 2002 (2002-05-10) page 13 SEQ ID NO: 1, 3</p> <p>-----</p>	7-9, 20-22
X	<p>WO 01/07632 A (GARCIA DENISE ; PEREZ PASCUAL (FR); RHOBIO (FR)) 1 February 2001 (2001-02-01) SEQ ID NO: 24, 29</p> <p>-----</p>	7, 9
-/--		

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/000812

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/40677 A (HILLYARD JEANNA R ; MONSANTO TECHNOLOGY LLC (US); BEAZLEY KIM A (US);) 23 May 2002 (2002-05-23) SEQ ID NO: 23 -----	7, 9
X	WO 02/34946 A (MONSANTO TECHNOLOGY LLC ; YE MINWEI (US); RANGWALA TASNEEM S (US)) 2 May 2002 (2002-05-02) SEQ ID NO: 2 -----	8, 9, 21, 22
X	WO 99/23232 A (NOVARTIS ERFIND VERWALT GMBH ; NOVARTIS AG (CH); STEEN PER (DK); MANNE) 14 May 1999 (1999-05-14) SEQ ID NO: 14 -----	7, 9, 20, 22
A	WIDHOLM JACK M ET AL: "Glyphosate selection of gene amplification in suspension cultures of 3 plant species" PHYSIOLOGIA PLANTARUM, vol. 112, no. 4, August 2001 (2001-08), pages 540-545, XP002285245 ISSN: 0031-9317 tables 1,2 -----	1-32
A	WO 02/27004 A (MONSANTO TECHNOLOGY LLC ; CHEN GUILAN (US); ZHOU HUA PING (US); HIRONA) 4 April 2002 (2002-04-04) the whole document -----	1-32
X	WO 02/44407 A (ROSQUE INGE ; SES EUROP N V (BE); BARNES STEVE (BE); WEYENS GUY (BE)) 6 June 2002 (2002-06-06) SEQ ID NO: 3 & 8 -----	20-22
X	WO 01/77384 A (PIEPENBROCK CHRISTIAN ; BERLIN KURT (DE); EPIGENOMICS AG (DE); OLEK AL) 18 October 2001 (2001-10-18) SEQ ID NO: 13630, 13629, 34476, 59837 -----	20-22
A	MCCASLIN M ET AL: "ROUNDUP READY ALFALFA" AMERICAN FORAGE AND GRASSLAND COUNCIL PROCEEDINGS, XX, XX, vol. 9, 2000, pages 396-400, XP001196937 the whole document -----	1-32

INTERNATIONAL SEARCH REPORT

International application No.
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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13 (completely), 27-32 (partially)

an alfalfa plant designated J-101, seed thereof, uses thereof, nucleic acids representing the site of insertion of a transgene in J-101

2. claims: 14-26 (completely), 27-32 (partially)

an alfalfa plant designated J-163, seed thereof, uses thereof, nucleic acids representing the site of insertion of a transgene in J-163

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/000812

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
US 6057496	A 02-05-2000	AU WO US	1214397 A 9723634 A2 2004025201 A1	17-07-1997 03-07-1997 05-02-2004
WO 9204449	A 19-03-1992	AT AU AU CA DE DE DK EP ES GR JP JP JP RU WO US US US US US US US	139566 T 655945 B2 8657891 A 2088661 A1 69120419 D1 69120419 T2 546090 T3 0546090 A1 2089232 T3 3021058 T3 3173785 B2 6500472 T 2001197841 A 2146290 C1 9204449 A1 6248876 B1 5633435 A 2002168680 A1 5627061 A 5804425 A 2002007053 A1	15-07-1996 19-01-1995 30-03-1992 01-03-1992 25-07-1996 09-01-1997 29-07-1996 16-06-1993 01-10-1996 31-12-1996 04-06-2001 20-01-1994 24-07-2001 10-03-2000 19-03-1992 19-06-2001 27-05-1997 14-11-2002 06-05-1997 08-09-1998 17-01-2002
WO 0236831	A 10-05-2002	AU CA EP WO	3089902 A 2425349 A1 1417318 A2 0236831 A2	15-05-2002 10-05-2002 12-05-2004 10-05-2002
WO 0107632	A 01-02-2001	FR AU CA CZ EP WO HU PL	2796963 A1 7007400 A 2380540 A1 20020344 A3 1200609 A1 0107632 A1 0202081 A2 354236 A1	02-02-2001 13-02-2001 01-02-2001 12-06-2002 02-05-2002 01-02-2001 28-10-2002 29-12-2003
WO 0240677	A 23-05-2002	AU WO	3644202 A 0240677 A2	27-05-2002 23-05-2002
WO 0234946	A 02-05-2002	AU EP WO US US	1536302 A 1366070 A2 0234946 A2 2002120964 A1 2004148666 A1	06-05-2002 03-12-2003 02-05-2002 29-08-2002 29-07-2004
WO 9923232	A 14-05-1999	CZ DK WO FI RU SE SE SK AU	9902351 A3 91699 A 9923232 A1 991221 A 2224024 C2 520353 C2 9902189 A 88599 A3 1558099 A	15-09-1999 28-06-1999 14-05-1999 28-05-1999 20-02-2004 01-07-2003 19-08-1999 13-03-2000 24-05-1999

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/000812

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9923232	A	DE	19881833 T0	10-02-2000
		EP	0950109 A1	20-10-1999
		GB	2337263 A	17-11-1999
		PL	334135 A1	14-02-2000
WO 0227004	A 04-04-2002	AU	9304401 A	08-04-2002
		CA	2420406 A1	04-04-2002
		CZ	20030629 A3	13-08-2003
		EP	1322773 A2	02-07-2003
		WO	0227004 A2	04-04-2002
		US	2002062503 A1	23-05-2002
		US	2004133939 A1	08-07-2004
		US	2004133940 A1	08-07-2004
WO 0244407	A 06-06-2002	AU	1841302 A	11-06-2002
		EP	1337669 A2	27-08-2003
		WO	0244407 A2	06-06-2002
WO 0177384	A 18-10-2001	AU	4835201 A	24-09-2001
		AU	5038101 A	24-09-2001
		AU	5057201 A	23-10-2001
		AU	5478801 A	23-10-2001
		AU	5479401 A	23-10-2001
		AU	7566301 A	23-10-2001
		AU	7633001 A	23-10-2001
		AU	7633101 A	23-10-2001
		AU	7748701 A	23-10-2001
		AU	7842001 A	07-11-2001
		AU	8960001 A	11-12-2001
		DE	20121960 U1	15-01-2004
		DE	20121964 U1	15-01-2004
		DE	20121965 U1	24-12-2003
		DE	20121968 U1	18-12-2003
		DE	20121969 U1	24-12-2003
		DE	20121970 U1	24-12-2003
		DE	20121972 U1	24-12-2003
		DE	20121973 U1	24-12-2003
		DE	20121974 U1	24-12-2003
		DE	20121977 U1	24-12-2003
		WO	0168911 A2	20-09-2001
		WO	0168912 A2	20-09-2001
		WO	0177375 A2	18-10-2001
		WO	0177164 A2	18-10-2001
		WO	0177376 A2	18-10-2001
		WO	0177377 A2	18-10-2001
		WO	0181622 A2	01-11-2001
		WO	0192565 A2	06-12-2001
		WO	0177378 A2	18-10-2001
		WO	0176451 A2	18-10-2001
		EP	1283905 A2	19-02-2003
		EP	1268855 A2	02-01-2003
		EP	1268856 A2	02-01-2003
		EP	1268857 A2	02-01-2003
		EP	1272670 A2	08-01-2003
		EP	1278893 A2	29-01-2003
		EP	1274865 A2	15-01-2003
		EP	1274866 A2	15-01-2003
		EP	1360319 A2	12-11-2003

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/000812

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0177384	A	EP 1370685 A2	17-12-2003
		EP 1268861 A2	02-01-2003
		WO 0177384 A2	18-10-2001
		JP 2004507213 T	11-03-2004
		JP 2004507214 T	11-03-2004
		JP 2004508807 T	25-03-2004
		JP 2003534780 T	25-11-2003
		JP 2003531589 T	28-10-2003
		US 2004029123 A1	12-02-2004
		US 2004048254 A1	11-03-2004